Earth to Saturn, Earth to Saturn!

Saturn's rings cast a shadow on the planet.

LESSON TIME

May be carried out over two days; total time approximately 1 hour.

PREPARATION TIME

Allow time to collect materials and make copies.

MATERIALS CHECKLIST

- *Board, easel, or transparency; markers*
- *Optional: a peppercorn and a ping-pong ball (or walnut)*
- *Pencils and crayons*
- *Copies of worksheets: "Earth and Saturn Drawing," "Brainstorming," "Cloze," "Independent Writing"*
- *Science Notebooks*

STUDENT PREREQUISITES

Students need to have done some reading and discussion of Saturn, and they should be able to write independently or with minimal teacher support.

LESSON NO. 6

Language Arts Focus — Descriptive Analogies
Science Focus — Understanding the Attributes of Earth and Saturn

OVERVIEW

This lesson should be done toward the second half of the activities in this unit. In this activity, students use drawing and writing to explore the comparative features of Saturn and Earth. To scaffold student writing, the lesson includes a drawing activity, a brainstorming activity, a structured Cloze activity, and a chance for independent writing where students create their own analogies.

BACKGROUND

Our solar system is populated by a rich variety of wonderfully different objects. Just think how different our own blue planet and Saturn are from one another! Viewed from space, Earth has striking green and brown landforms surrounded by blue oceans and is covered by white clouds. Saturn, in contrast, appears muted, with storm-induced, yellowish striations and spectacular rings and moons. For more information on Earth and Saturn, visit:

http://www.solarsystem.nasa.gov/index.cfm

Objectives

Students will:

1. Learn that Saturn and Earth differ in many ways.
2. Practice a variety of writing strategies to create comparative analogies.
3. Use analogies to describe the characteristics of Saturn and Earth.

Teacher Preparation

Make copies, one per student, of the four worksheets, "Earth and Saturn Drawing," "Brainstorming," "Cloze," and "Independent Writing." You may wish to make transparencies of these worksheets for modeling. The optional peppercorn and ping-pong ball (or walnut) may be used as analogies for Earth and Saturn, respectively.

Procedure

Day One

Exploring Attributes of Earth and Saturn — 30 minutes

1. Begin with a whole-class discussion of what students know about Earth, Saturn, and our solar system.
2. Distribute an "Earth and Saturn Drawing" worksheet and crayons to each student.
3. Ask students to illustrate the Earth on the left half of the worksheet. Encourage them to draw green or brown land and blue water, and include other details they know about Earth.
4. Ask students to illustrate Saturn on the right half of the worksheet. Demonstrate how to draw Saturn's rings to show them going behind the planet. This may be challenging for young children to draw. Encourage students to draw Saturn's stormy atmosphere marked by beige and brown streaks.
5. After their illustrations are complete, distribute a "Brainstorming" worksheet to each student.
6. Point out to students that one side of the worksheet has a small circle and the other a large circle. Ask them: Which one is Earth? Which one is Saturn? Have them write "Earth" over the small circle and "Saturn" over the large circle.
7. Begin a class discussion by asking students to describe Earth and Saturn and their differences. Students can look at the "Earth and Saturn Drawing" worksheets that they have just completed for ideas about differences.
8. List students' comments on the board, easel, or transparency. Your list might look something like this:

Earth	*Saturn*
small	huge
very tiny	enormous
no rings	many rings
ice cubes	icy rings
has people	no people
one moon	many moons

9. Ask students to list their own contrasting "Earth" and "Saturn" words in the two columns on their "Brainstorming" worksheets. Encourage students to use the list on the board as a reference.
10. Collect both worksheets for follow-up activity.

Day Two

Structured and Independent Writing — 20 to 30 minutes

1. Return worksheets to students and do a short review of vocabulary by asking students for pairs of words from their "Brainstorming" worksheets.
2. Using one of their contrasting word pairs, model how to complete the sentences on the "Cloze" worksheet. You might write something like:

   "The Earth is very tiny and Saturn is enormous."
3. Distribute the "Cloze" worksheet and have students write four analogies. The worksheet serves as writing support and practice before students write independently.
4. Distribute the "Independent Writing" worksheet and ask them to write four analogies on their own.
5. Students' writing on the lined paper may serve as a first draft or a final copy.

Using Science Notebooks

Writing prompts for this lesson:

1. Focus questions: How is Earth different from Saturn? What makes Saturn special to you?
2. Process questions: What did you do to think about the differences between Earth and Saturn?

Why This Works

When introducing new information and concepts to young students, it's effective to link new information to something known. In this case, we take something we encounter every day and already know a lot about — our Earth — and see how it compares to Saturn.

By creating descriptive analogies, students can hone their reasoning skills, develop critical thinking, understand relationships and learn new vocabulary. Practice with analogies can also help prepare students for test-taking as many types of analogies appear on standardized tests.

Assessment

Students' worksheets will indicate the extent to which they can differentiate between Earth and Saturn and create analogies to describe them. Their Science Notebooks will also show their thinking about the two planets.

Standards

NCTE Standards for the English Language Arts

- Students employ a wide range of strategies as they write and use different writing process elements appropriately to communicate with different audiences for a variety of purposes.
- Students apply knowledge of language structure, language conventions (e.g., spelling and punctuation), and genre to create, critique, and discuss print and nonprint texts.
- Students participate as knowledgeable, reflective, creative, and critical members of a variety of literacy communities.
- Students use spoken, written, and visual language to accomplish their own purposes (e.g., for learning, enjoyment, persuasion, and the exchange of information).

National Science Education Standards

Physical Science

- Position and motion of objects

Earth and Space Sciences

- Objects in the sky